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ABSTRACT

This booklet, one in a series on aviation careers, outlines career opportunities in aviation maintenance. The booklet provides the following information about aviation maintenance jobs: nature of the work, working conditions, where the jobs are, wages and benefits, opportunities for advancement, requirements to enter the job, opportunities for training, and outlook for the future. (The aviation maintenance job category includes aircraft mechanics and aircraft and instrument repair personnel.) (KC)

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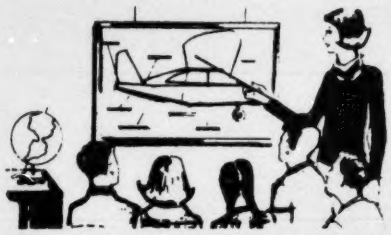

AVIATION EDUCATION

DEPARTMENT OF TRANSPORTATION/FEDERAL AVIATION ADMINISTRATION
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Aviation Careers Series

AVIATION MAINTENANCE
(Aircraft Mechanics & Aircraft & Instrument Repair Personnel)

by
Walter Zaharevitz

(Revised 1980)

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NATURE OF THE WORK

Aviation maintenance mechanics have the important responsibility of keeping airplanes airworthy or in a safe and efficient condition to fly. They service, repair, overhaul, and test aircraft airframes, engines, propellers, aircraft systems, electronic equipment, and aircraft instruments.

Aircraft mechanics may be licensed or unlicensed. The licensed mechanic holds either an Airframe and Powerplant (A&P) Mechanic's Certificate or a Repairman's Certificate from the Federal Aviation Administration (FAA), or a Second Class Radio Telephone License (or better) from the Federal Communications Commission (FCC). These are issued upon successful completion of oral, written, and practical examinations. The A&P Certificate allows a mechanic to work on any part of the aircraft's engines, airframe and systems. The mechanic with the FAA's Repairman Certificate can work on those parts of the aircraft that the certificate specifically allows, such as radio or instruments. If the repair person works on transmitting equipment aboard the aircraft (radio, radar, etc.), he or she must also hold at least the FCC Second Class Radio Telephone License.

Unlicensed mechanics and apprentice mechanics may work on various parts of the plane under the supervision of a licensed mechanic who must sign approval of the work before the aircraft or its equipment is considered airworthy.

Aircraft mechanics employed by the airlines perform either line maintenance work, i.e., routine maintenance or emergency repairs at airline terminals, or major repairs or periodic inspections at an airline's overhaul base. Aircraft mechanics employed in general aviation do maintenance and repair work similar to airline mechanics. However, the equipment they service is generally smaller and less complex.

WORKING CONDITIONS

Depending upon the type of work they do, aircraft mechanics work in hangars, on the flight line, and in repair shops. They use hand and power tools and test equipment. Flight line mechanics sometimes must work outdoors even in disagreeable weather in order to make emergency repairs. This is sometimes precarious work because of the use of a ladder or scaffold. The physical demands can be heavy -- with frequent lifts or pulls of up to 50 pounds. Physical requirements include stooping, kneeling, crouching, crawling, reaching, handling, fingering, and feeling. Noise and vibration are common.

Aircraft mechanics often must work under the pressure of time to maintain airline flight schedules or, in general aviation, to keep from inconveniencing customers beyond a reasonable time. At the same time, the aircraft mechanic cannot sacrifice high standards of workmanship to speed up the job.

WHERE THE JOBS ARE

The scheduled airlines employ about 46,000 mechanics at large airline terminals and at overhaul bases which are concentrated in the major terminal areas in New York, Los Angeles, San Francisco, Chicago, Miami, Denver, Atlanta, Kansas City and Tulsa.

Over 100,000 aircraft mechanics work at independent repair stations or in instrument repair shops located at or near most of the nation's 14,574 airports. About 315 mechanics are women.

The military services employ about 30,000 civilian aircraft mechanics to work on military aircraft at Army, Navy, and Air Force aviation installations all over the country.

In addition, several thousand mechanics work for air taxi operators, aerial applicators, supplemental airlines, corporations owning a fleet of aircraft, aircraft manufacturers, and the Federal Aviation Administration. The majority of FAA mechanics are located at the FAA Aeronautical Center in Oklahoma City, Oklahoma.

Aircraft mechanics holding the FAA Repairman's Certificate may be employed only at FAA certificated repair stations or at airline shops.

WAGES AND BENEFITS

Aircraft mechanics generally work 40 hours a week on eight-hour shifts around the clock. Presently, overtime work is common. Airline mechanics earn more than general aviation mechanics. The basic airline mechanic's wage is $11.28 per hour. This will increase to $13.00 per hour effective July 1, 1981. In addition, there is an increase in airline mechanic salary for longevity, for licenses held, for line work, and for shift work.

In general aviation, mechanic salaries are determined largely by the size of the aircraft serviced. One national survey of salaries of mechanics with an A&P license in general aviation showed a mean of about $5.87 per hour and a high of $8.90 per hour. This same survey showed that mechanics without an A&P license earned a mean of $4.61

per hour and a high of $7.50 per hour. It is anticipated that wages for general aviation mechanics will increase in the next few years and will come closer to the salaries paid by the airlines.

Paid holidays and paid vacations, health and life insurance plans, employee suggestion plans with cash awards, retirement pensions, and sick leave are offered in varying degrees by both the airlines and independent repair station operators (general aviation). Airlines also extend free or reduced air transportation to employees and their families. General aviation offers more local points of employment.

The International Association of Machinists and Aerospace Workers and the Transport Workers Union of America are the principal unions for aircraft mechanics. Some mechanics are represented by the International Brotherhood of Teamsters, Chauffeurs, Warehousemen, and Helper of America.

OPPORTUNITIES FOR ADVANCEMENT

The apprentice mechanic or repair person having the required experience with engines, airframes or avionics (airborne electronics) and who is a graduate of an approved aircraft mechanics course can acquire the A&P or Repairman's Certificate or the FCC License upon successful completion of oral, written, and practical FAA or FCC examinations. Mechanics who aspire to these top ratings have opportunities to advance to higher paying jobs as lead mechanic (or crew chief), inspector, lead inspector and shop foreman.

Promotion to these higher grade jobs with the airlines is usually acquired on the basis of company examination. A few advanced-rating mechanics with administrative ability reach supervisory and executive positions. Some who have broad experience in maintenance and overhaul become inspectors for the Federal Aviation Administration.

Mechanics with at least three years of multi-engine flying experience who aspire to a flying career may take FAA examinations for the position of flight engineer, with opportunities to become, eventually, a co-pilot or pilot.

REQUIREMENTS TO ENTER THE JOB

Educational: While a high school diploma is not required to become an apprentice aircraft mechanic, employers give preference to applicants who are high school or vocational school graduates, thus, such a diploma is practically essential. Mathematics, physics, chemistry, English

and aerospace education courses are suitable subjects to pursue while in high school, as the aircraft mechanic must understand many physical principles involved in the operation of the aircraft and its systems. The ability to read maintenance manuals and air regulations and to maintain aircraft logs and records is also important. A high school diploma is a prerequisite to attending a technical school or a college offering A&P training. The aircraft mechanic is expected to continue his or her education even after she or he is on the job in order to keep abreast of the continual technical improvements to aircraft and aircraft systems.

Physical: The aircraft mechanic should be in good health, with no physical handicaps that would prevent carrying out the duties which, at times, can be rigorous.

Personality: The successful aircraft mechanic has an above average mechanical ability and desire to work with his or her hands and with tools. He or she has an interest in aviation, an appreciation of the importance of doing a job carefully and thoroughly, and a desire to continue to learn throughout her or his career.

OPPORTUNITIES FOR TRAINING

The qualified student who wishes to become an aircraft mechanic can follow one of several paths:

(1) He or she can begin work for an airline or an independent repair station as an apprentice mechanic, learning as one earns. This type of training requires more time to earn an A&P or Repairman's Certificate or the FCC License, and earning power remains at a lower rate over a longer period of time.

(2) She or he can take aircraft mechanic courses at one of the many FAA certificated private or public technical schools. A high school diploma is required for entrance to these schools but the period of training is shorter than on-the-job training and earnings upon completion of the course are higher. Also, the graduate of such a course is qualified to take the FAA or FCC exams when the course is finished.

(3) He or she can receive training as an aircraft mechanic while in the military service. With some additional study, she or he can qualify for a civilian mechanic job when the period of military service is completed.

Local public and private vocational institutions and the military services are major sources of supply for mechanics. Many airlines have standing orders with FAA approved aviation maintenance technician's training schools and other educational institutions for all graduate mechanics.

The cost of technical school training can be several thousand dollars for an 18 to 24 month course. Financial assistance is available through the U.S. Office of Education. For such information, write to: Office of Guaranteed Student Loans, Office of Management, U. S. Office of Education, Washington, D. C. 20202.

For a free list of FAA certificated aviation maintenance technician schools, write for Advisory Circular 147-2S to: U. S. Department of Transportation, Publications Section, M-443.1, Washington, D. C. 20590.

The Air Transport Association of America, 1709 New York Avenue, N.W., Washington, D. C. 20006, can furnish a list of their member airlines.

OUTLOOK FOR THE FUTURE

The employment outlook for aviation maintenance personnel is very encouraging. Currently, it is estimated that there will be an annual average of 7,000 openings for aircraft mechanics. One survey indicates that the increased need for additional avionics maintenance personnel over the next few years amounts to 230 percent.

For small operators an engine and parts inventory for maintenance is an expensive non-income-producing investment. Using an outside contractor to provide overhaul maintenance, and consequently, the parts inventory, results in an economic advantage. This is especially true with corporate owned aircraft. Many small airlines and aircraft-owning companies have found that contracted maintenance is the most economical means of maintaining their airplanes. As the cost of airplane parts continues to rise, this situation will become applicable to more companies.

It has been estimated that for every hour of flight, a jet airliner undergoes five hours of maintenance. For light airplanes, a conservative estimate is three hours of ground work for every hour of flight.

A jet airliner has 18,000 key structural parts and more than 50,000 individual components, all of which are watched, tested, and replaced before they show signs of wear.

The projected increase in the number of aircraft in operation, in the number of flying hours, and in the number of active pilots indicates rapid employment growth for aviation maintenance personnel. In addition to the anticipated aviation growth, the student aircraft mechanic has an age advantage. It is estimated that 75,000 veteran mechanics who received their training during World War II and the Korean action will retire within the next five years. Such people make up about one third of the aviation maintenance work force, including the airlines and the military.

Employment opportunities for aviation maintenance personnel in the Federal Government may fluctuate due to changes in defense and other Federal Government spending.

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